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1.0 Introduction

Enviroarm Limited has been instructed by H Evason & Co to prepare an Environmental Permit Application for the Dorrington Quarry Landfill under the Environmental Permitting (EP) (England and Wales) Regulations 2016 for inert waste landfill which is to now include the original deposited area being re-worked in the recycling area.

1.1 Methodology

This Environmental Risk Assessment (ERA) is an assessment of the risks to the environment and to human health that may be associated with the proposed operations at the site.

The assessment has been completed in accordance with the Environment Agency (EA) Technical Guidance *'Risk Assessments for your Environment Permit'* (May 2018)[1]. The aim of the assessment is to identify any significant risks and demonstrate that the risk of pollution or harm will be acceptable by taking the appropriate measures to manage these risks.

This ERA uses the following approach for identifying and assessing the risks from the proposed operation:

Step 1 Identify risks and sources of risk from your activity.

Step 2 Where risks are identified from Step 1 then identify the receptors thatcould be affected

Step 3 Identify potential pathways between the sources of risk and receptors

Step 4 Assess the risks and check that they are acceptable. Justify appropriate measures to control your risks, if necessary.

Step 5 Submit your assessment.

The ERA for an EP application requires all receptors that are near the site and could reasonably be affected by the activities to be identified and considered as part of the assessment.

For the purposes of this ERA and given the nature of the landfill and associated WTS, a 2km radius from the site's EP boundary has been adopted in reviewing potentially sensitive receptors of ecological importance along with features such as sites of cultural and natural heritage. A radius of 1km from the site's EP boundary has been adopted for all other potentially sensitive receptors (for example, residential, commercial, industrial, agricultural and surface water receptors).

Section 2.0 of this document is a screening step to identify the risks requiring consideration as part of this assessment. Section 3.0 identifies people or parts of the environment that could be harmed (at potentially significant risk) by the activity. Section 4.0 of this document presents the assessment and demonstrates that any risks of pollution or harm will be mitigated to manage the risk.

This ERA should be read in conjunction with the following documents submitted with this EP application;

- Environmental Setting and Site Design Report (ESSD) (Ref: 416.07238.00001/ESID);
- Noise Assessment Report (Ref:LE12936/005);
- Dust Assessment Report
- Waste Acceptance Procedure (WAP) (SLR Ref: 416.07238.00001/WAP);

[1]https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit, accessed March 2018

2.0 Identifying the Risks

Step 1 is a screening step to identify the potential risks to the environment from the development. The following are generally considered to require assessment for bespoke operations:

- Amenity and Accidents;
- Site Waste;
- Global Warming Potential;
- Noise,
- Fugitive Emissions to Air, Water and Land; and
- Accidents.

As a result of this EP application, the amenity and accidents, noise and fugitive emissions have been assessed based on the proposed activities included within Section 4 of this ERA.

3.0 Site Setting and Receptors

3.1 Site Setting

The site entrance is located at National Grid Reference (NGR) SJ 47554 03875, the centre of the recycling area is SJ 74635 03869 and the centre of the landfill is at SJ 47680 03568, which lies approximately 9km south of Shrewsbury on the northern edge of Dorrington. The site is off the A49.

The site is a former quarry. The site is surrounded with large areas of agricultural land and the A49 is the west and a railway line to the east.

The remaining land use immediately surrounding the proposed site is predominately agricultural land, with scattered residential and commercial / industrial premises. Access to the site will be via A49. The site's location is illustrated on Drawing ESSD2, and the site layout on Drawing ESSD4.

All surrounding land uses and receptors within 1km are identified on Drawing ESSD2 and all cultural and natural heritage is illustrated on Drawing ESSD3.

The immediate surrounding land uses are described in further detail below.

Table 3.1: Receptor List identified on ESSD 2.

Type of Receptor	Receptor Name	Location to site	Elevation m AOD
Domestic Dwelling Receptor	**DR1**	Properties Wayford House and Lower Wayford next to the entrance and shielded by a tree belt	95m AOD
Domestic Dwelling Receptor	**DR2**	Wayford Lodge ios near to brook which runs through the site off the A49.	95m AOD
Domestic Dwelling Receptor	**DR3**	Wayford House is off the A49 and is just to the west the site behind a tree belt.	103m AOD
Domestic **Dwelling Receptor**	**DR4**	Small cottages 500 metres east of the site with the railway track and fields between it and the site	100m AOD
Domestic Dwelling Receptor	**DR5**	Dunstone and Sundial; Cottages east south east of the site with railway track and fields between them and the site.	100m AOD
Domestic Dwelling	**DR6**	Dorrington village south west of the site with trees	108-104m AOD

Receptor		between Dorrington and site	
Domestic Dwelling Receptor	**DR7**	The Brambles/Pasrk Terrace south west of site 400 metres from site.	112m AOD
Domestic Dwelling Receptor	**DR8**	Houses in Stapleton north west of the site.Grass and trees between site and Stapleton	97m AOD
Domestic Dwelling Receptor	**DR9**	The Bungalow north of the sue off A49.	98m AOD
Surface Water Receptor	**SW1**	Tributary of Cound Brook that runs through the site.	90m AOD
Surface Water Receptor	**SW2**	Cound Brook which runs northwards and enters the Severn	89m AOD
Surface Water Receptor	**SW3**	A lake in a former sand pit to the north west of the site just before Stapleton	88m AOD
Major roads and highways	**HA1**	A49 which runs nrth and south of the site Cornets End Lane Road leads directly from the access and is the main road used for the site and is a link road onto the A4526.	96m AOD to the north of the site 103m AOD at site and 108m to the south
Commercial Activity	**IR1**	Gorse Farm RSPCA Centre with track fields and trees between it and site.	95m AOD
Commercial Activity	**IR2**	AT Wildes plant hire. Land and track between Wildes and site. Site to the south east of landfill.	98m AOD
Commercial Activity	**IR3**	Dorrington Business Park , south of site. Fields between site and BP.	112m AOD
Commercial Activity	**IR4**	Bulk Freight on west side of A49 to west of the site.	100m AOD
Railway Track	**R1**	Shrewsbury ot Hereford line.	95m AOD

3.2 Geology

Published mapping of the superficial geology (BGS (2019); as shown on Drawing ESID10 indicates that fluvioglacial deposits is present above bedrock across much of the area surrounding the site.

The site has been worked for mineral to within 1 metre of the water table and the sand also has silt and clay fractions.

Published mapping of the bedrock geology (BGS (1932); as shown on Drawing ESSD8) shows that the site is situated within an outcrop of Carboniferous aged Coal Measures strata (predominately comprising mudstones with sub-ordinate sandstones and siltstones).

3.3 Hydrogeology

3.3.1 Aquifer Characteristics

The site is located on a Secondary A aquifer with superficial deposits of variable permeability forming a Secondary A Superficial aquifer.

The site is not located within a Source Protection Zone (SPZ). The nearest outer SPZ (SPZIII)[4] is located circa. Aquifer summary data is presented at Appendix ESSD 5.

Aquifer Properties

The site has a superficial deposit aquifer designation. A shallow groundwater gradient of 0.001875m/m has been calculated from the available groundwater elevations, with the prevailing groundwater flow direction to the north from 95.9mAOD at BH5 top 91.4m AOD at BH3. Groundwater elevations and interpolated potentiometric surface plots are presented on Drawing ESSD 11 and the monitoring data is presented at Appendix ESSD 7. Borehole logs for the new groundwater and landfill gas boreholes are presented at Appendix ESSD 8.

Evaluation of the hydraulic conductivity of the Secondary Aquifer has been made to inform assessment of the impact of the Proposed Development.

Source Protection Zones

The site does not lie within a Source Protection Zone (SPZ), see ESSD9.

4.1 Hydrology

The site lies within the catchment area of the River Severn. The nearest water course to the site is a tributary of the Cound Brook situated between the landfill site and the inert recycling facility.

4.2 Ecology

The following information has been assessed in order to determine the ecological site setting:

- MAGIC Mapping Website[6];

4.2.1 European/International Sites

An ecological screening was not requested from the Environment Agency. The site is not designated a Local Wildlife Site, devoid of trees and grass except for the boundary which is to remain unchanged and is not within a RAMSAR,SAC or SPA.

4.3 Cultural and Heritage

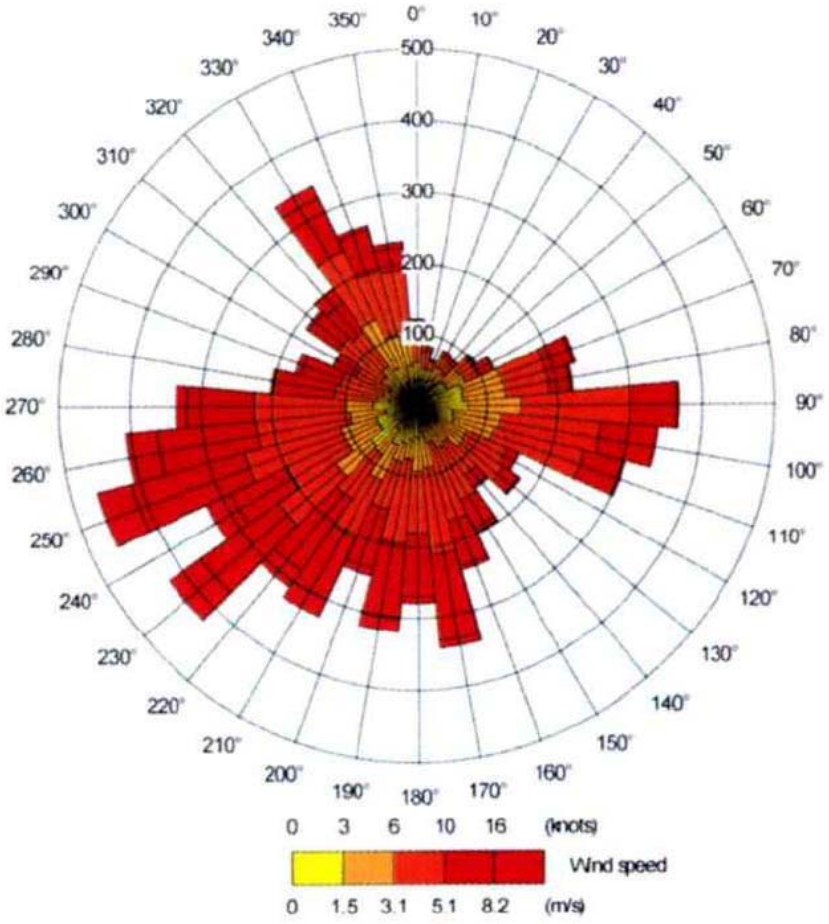
Information provided by EA indicates numerous Listed Buildings within 2km of the site. The closest of each to the site is shown below:

- Moat: Stapleton, 1.0km north west; and
- Other moats within 5 km

4.4 Windrose

The windrose shows that winds from the south west and west south western quarters are more frequent and winds.

Figure 4-1
Shawbury Meteorological Station



4.0 Environmental Risk Assessment

The tables for this risk assessment are contained in Appendix A and assess the site in terms of potential hazards posed, receptors and pathways, along with management and assessment of the identified risks.

The probability of exposure is the likelihood of the receptors being exposed to the hazard, and is defined as low, medium or high. These terms are qualified as follows;

- Low: exposure is unlikely, barriers in place to mitigate against exposure.
- Medium: exposure is fairly probable, barriers to exposure less controllable.
- High: exposure is probable, direct exposure likely with few barriers.

The methodology outlined in Section 1.1 of this report is the basis on which it is determined whether the proposed operations will lead to significant impacts on the surrounding environment. Where a conclusion of 'not significant' has been reached, it is proposed that the mitigation and management measures that will be in place at the site will be sufficient to ensure that there will be no impact at the surrounding environment.

5.0 Conclusion

This ERA has been undertaken as described by regulatory guidance issued by the EA[1]. The assessment is provided as part of the application for an environmental permit application for the Dorrington Quarry Inert Landfill.

This qualitative risk assessment has considered odour, noise, fugitive emissions, dust, releases to water, and potential for accidents and incidents. The assessment concludes that with the implementation of the risk management measures described above, potential hazards from the proposed development are not likely to be significant and no further assessment is required. An DMP and NMP has been prepared in support of this ERA.

APPENDIX A:

Risk Assessment Forms

DORRINGTON QUARRY LANDFILL ACCIDENTS **DRAWING ESSD 2**

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
What is at risk? What do I wish to protect?	**What is the agent or process with potential to cause harm?**	**What are the harmful consequences if things go wrong?**	**How might the receptor come into contact with the source?**	**How likely is this contact?**	**How severe will the consequences be if this occurs?**	**What is the overall magnitude of the risk?**	**On what did I base my judgement?**	**How can I best manage the risk to reduce the magnitude?**	**What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).**
Local human population and / or livestock after gaining unauthorised access to the waste operation	All on-site hazards: wastes; machinery and vehicles.	Bodily injury	Direct physical contact	Medium	Low	**Low**	Detailed Standard Operating Procedures in the Site Health and Safety Manual and all staff trained on plant	Activities shall be managed and operated in accordance with a management system.Site gates locked after closing time	Low
Local human population and local environment.	Arson and / or vandalism causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or arsonists/vandals. Pollution of water or land.	Air transport of smoke. Spillages and contaminated firewater by direct run-off from siteinto Holbeche Brook	Medium	Low	**Low**	Permitted waste types do not include flammable materials, as not permitted in landfill so a low magnitude risk is estimated. The landfill phases 1 to 8 are all below ground with no possibility of direct runoff.Later phases do but large screen mounds around site.Site will only take low organic matter levels so methane gas production will be extremely low so low risk of explosion	EMS procedures in place including emergencies, and spillage procedures	
Local human population and local environment	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff or fire fighters. Pollution of water or land.	As above.	Medium	Low	**Low**	As above.	As above (excluding comments on access to waste). Permitted activities do not include the burning of waste.	Low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
What is at risk? What do I wish to protect?	**What is the agent or process with potential to cause harm?**	**What are the harmful consequences if things go wrong?**	**How might the receptor come into contact with the source?**	**How likely is this contact?**	**How severe will the consequences be if this occurs?**	**What is the overall magnitude of the risk?**	**On what did I base my judgement?**	**How can I best manage the risk to reduce the magnitude?**	**What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).**
All surface waters close to and downstream of site.	Spillage of liquids, leachate from waste, contaminated rainwater run-off from waste e.g. containing suspended solids.	Acute effects: oxygen depletion, fish kill and algal blooms	Direct run-off from site across ground surface, via surface water drains, ditches etc.	Low	Low	**Low**	Site HRA indicates no leachate impact.Fuel store not considered a risk	All liquids shall be provided with secondary containment.... (applies to non- wastes such as fuels). Run-off restricted on emissions of substances, with appropriate measures. Wastes from potentially contaminated sites require analysis. Storage & spreading has distance limitations from watercourses.	Very low
All surface waters close to and downstream of site.	As above	Chronic effects: deterioration of water quality	As above. Indirect run-off via the soil layer	Low	Low	**Low**	Waste types are inert so harm is likely to be temporary and reversible.	As above	Very low
Abstraction from watercourse downstream of facility (for agricultural or potable use).	As above	Acute effects, closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains, ditches etc. then abstraction.	Low	Low	**Low**	Site not within Source Protection Zone.No private water supplies near by.	As above	Very low

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
What is at risk? What do I wish to protect?	**What is the agent or process with potential to cause harm?**	**What are the harmful consequences if things go wrong?**	**How might the receptor come into contact with the source?**	**How likely is this contact?**	**How severe will the consequences be if this occurs?**	**What is the overall magnitude of the risk?**	**On what did I base my judgement?**	**How can I best manage the risk to reduce the magnitude?**	**What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).**
Groundwater	As above	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole.	Transport through soil/groundwater then extraction at borehole.	Low	Low	**Low**	Site not within Source Protection Zone.No private water supplies near by. HRA demonstrates no release of Hazardous Substances into groundwater and non hazardous pollutants at aceptable levels	As above	Very low
Protected sites - European sites and SSSIs	Any	Harm to protected site through toxic contamination, nutrient enrichment, smothering, disturbance, predation etc.	Any	Medium	Medium	**Low**	Waste operations may cause harm to and deterioration of nature conservation sites.	Emissions of substances not controlled by emission limits shall not cause pollution. At 500 metres or above, the potential hazards from the permitted activities pose a low risk to the broad sensitivity of species and habitats groups.	Low